

c6 directing radiation from a radiation source to a flow chamber attached to said positioning device.

c7 51. A radiation directing device, comprising a mirrored surface proximal to a radiation beam source interrupted by one or more pin holes, said pin holes having an elliptical shape, wherein said mirrored surface prevents passage of radiation in the UV, VIS or IR regions of the spectrum, wherein the major axis of said elliptical pin holes is about 0.1 to 2 mm.

REMARKS

Claims 1-3 and 5-71 are pending in the above-identified application. Claims 1, 15, 19, 25, 38, 50 and 51 have been amended above. Support for the amendments can be found throughout the application as filed. Specifically, support for the amendments to claims 1, 19 and 51 reciting that the mirrored surface is proximal to a radiation beam source can be found, for example, in Figure 2 and at page 10, lines 11-13, page 10, lines 27-30, and page 11, lines 8-16. Support for the amendment of claims 15, 25 and 38 that the orthogonal orientation of a changed radiation beam can be found, for example, at page 16, lines 10-11, page 16, lines 19-23 and page 17, lines 6-13 and lines 16-17. Claim 50 has been amended to recite the complete language of the claimed element recited in lines 2-3 of that claim as suggested by the Examiner. Accordingly, no new matter has been added and entry of the amendments is respectfully requested.

Objections to the Drawings

The proposed drawing changes have been disapproved allegedly because they fail to show every feature of the invention specified in claims 15, 25 and 38. The Office Action asserts that Figure 4B fails to illustrate radiation beams passing

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through two or more pin holes having a changed propagation direction that are orthogonal to each other.

Applicant respectfully requests reconsideration and withdrawal of this ground of objection. First, Applicant is claiming a device or an apparatus. The device, or the apparatus containing the device, can function to change the direction of propagation of a radiation beam when such a radiation beam is passed through the device. As stated in the previous response, Applicant is not claiming the device together with a radiation beam. Recitation of the radiation beam element such as "for radiation beams passing through" in claim 8 (emphasis added), for example, is for clarity in understanding the orientation and redirection of a radiation beam once the device is placed in use.

Second, Applicant has amended claims 15, 25 and 38 above to recite that the direction of propagation for radiation beams passing through two or more pin holes is changed so they are orthogonal to their forward direction of propagation. Figure 4B shows such an orthogonal relationship where, for example, radiation beam **7c** is redirected so that it is orthogonal to its forward direction. Radiation beams **6a-c** and **7b** are indicative reference orientations for the forward direction. Accordingly, reconsideration and withdrawal of this rejection is respectfully requested.

The Office Action also objects to the Drawings allegedly because they fail to show features of the automated system of claims 48-50 and 65-71. Authority for this requirement for corrected drawings is alleged to be 37 C.F.R. §1.83(a), which states that the drawings must show every feature of the invention specified in the claims. Applicant respectfully traverses.

The requirement for a drawing is specified in 37 C.F.R. §1.81, which provides that Applicant is required to furnish a drawing of the invention "where necessary for the understanding of the subject matter sought to be patented." Completeness of a

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drawing under 37 C.F.R. §1.83 is met when the drawing shows the structural detail that is of sufficient importance to be described. *Ex parte Good*, 1911 C.D. 43, 164 O.G. 739 (Comm'r Pat. 1911).

Furnishing a drawing showing each and every feature of the claimed automated system is not required for the understanding of the claimed subject matter because all features necessary for understanding are shown in Figures 1-4. For example, Figure 1 shows a pin hole mirror. Figure 2 shows a pin hole mirror containing apparatus for determining alignment of a radiation beam. Figure 3 shows a pin hole mirror containing attached prisms and Figure 4 shows an apparatus incorporating a pin hole mirror with attached prisms for determining alignment of multiple radiation beams. Those features of the claimed invention not depicted in the Figures are well known to those skilled in the art and, as such, are not necessary for the understanding of the invention. Further, the drawings are complete because they include structural detail of sufficient importance and omit that which is well known to those skilled in the art, such as a computer system, positioning device or radiation source. Therefore, inclusion of any additional features would confuse, rather than clarify and facilitate, the understanding of the claimed invention, and it would fail to provide significant additional structural detail. Accordingly, Applicant respectfully requests reconsideration and withdrawal of this ground of objection.

Rejections Under 35 U.S.C. §112

Claims 19-47 and 59-64 stand rejected under 35 U.S.C. §112, second paragraph, as indefinite allegedly for omitting essential structural cooperative relationships of elements. An omitted radiation beam relative to other claimed elements is asserted to be omitted allegedly because dependent claims 30 and 44, directed to a means for collimating radiation to the radiation detecting means, support the interpretation that the radiation collimated for detection is not the radiation beam reflected by the mirrored surface.

Applicant submits that the claims are clear as written and recite all elements necessary for one skilled in the art to make and use the invention as claimed. The rationale that a dependent claim which includes a collimating means and that the definition of a radiation beam includes collimated radiation is insufficient to support the apparent interpretation that the reflected radiation beam and the radiation directed to the detecting means are different. In this regard, Applicant points out that just because a radiation beam may be propagated in a uniform direction, that meaning does not exclude the use of a means for collimating such a radiation beam to, for example, re-collimate, further collimate or to ensure that a beam is collimated. Accordingly, the claims do not omit necessary structural connections and are sufficiently clear to allow those skilled in the art to practice the invention as claimed. Therefore, Applicant respectfully requests that this ground of rejection be withdrawn.

Rejections Under 35 U.S.C. §102

Claims 1-3, 19-22, 28, 32, 51, 53 and 59 stand rejected under 35 U.S.C. §102(b) as anticipated by Ebbing allegedly because Ebbing describes a radiation directing device consisting of a screen having a mirrored surface that is interrupted by one or more pinholes which also have the claimed dimensions. Ebbing also is alleged to describe the additional elements recited in rejected claim 19 and in the rejected dependent claims.

Ebbing appears to describe an apparatus designed to check the perpendicularity of a laser beam to a wafer surface by observing the back reflection of the laser beam. When the laser beam strikes the wafer surface in an out-of-normal system the back reflection illuminates a target on the side of the pinhole opposite to the laser source (see Figure 3 and col. 4, lines 51-52; col. 5, lines 8-12 and col. 5, lines 32-47). Therefore, Ebbing describes a pinhole having a reflective surface on the distal side of his pinhole relative to the laser source.

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In contrast, Applicant claims a radiation directing device having a screen interrupted by one or more pin holes with a mirrored surface that is proximal to a radiation beam source. The proximal location of the mirrored surface can serve, for example, to indicate the alignment of an incident radiation beam relative to the pin hole before the radiation beam passes through the pin hole. Applicant's claimed radiation directing device is distinct from the pinhole described by Ebbing at least because the claimed mirrored surface is proximal to the radiation source whereas Ebbing's reflective surface is located on the distal side of the pinhole. Accordingly, Applicant respectfully requests that this ground of rejection be withdrawn.

Claims 33-36, 43, 46, 47 and 62, stand rejected under 35 U.S.C. §102(a) as anticipated by Asbury et al. allegedly because it describes a flow cytometer having a radiation beam aligning apparatus consisting of a flow chamber, a pin hole mirror, a means for directing emission radiation from the flow chamber, and a means for detecting reflected radiation. The further elements recited in the rejected dependent claims also are alleged to be described by Asbury et al.

Applicant respectfully submits that this rejection has been rendered moot by the Katz-type Rule 132 Declaration of Dr. van den Engh, submitted herewith as Exhibit A, establishing that the cited reference describes Applicant's own work. Accordingly, the Asbury et al. reference is not applicable as prior art. Reconsideration and withdrawal of this ground of rejection is respectfully requested.

Rejections Under 35 U.S.C. §103

Claims 6, 7, 23 and 29-31 stand rejected under 35 U.S.C. §103(a) as allegedly obvious over Ebbing. In this regard, the Office Action alleges that, although Ebbing lacks an explicit description of the elements recited in the rejected dependent claims, that it would nevertheless have been obvious to one of ordinary

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skill in the art to have provided for the claimed elements given the description in Ebbing.

To establish a *prima facie* case of obviousness, the Office must show that the prior art would have suggested the claimed device to one of ordinary skill in the art and that it could have been carried out with a reasonable likelihood of success when viewed in the light of the prior art. *Brown & Williamson Tobacco v. Philip Morris*, 229 F.3d 1120, 1124 (Fed. Cir. 2000). Establishing that the prior art would have suggested the claimed device requires an underlying factual showing of a suggestion, teaching, or motivation to combine the prior art references and is an "essential evidentiary component of an obviousness holding." *Brown & Williamson Tobacco*, 229 F.3d at 1124-25. Applicant submits that Ebbing cannot render the claimed invention obvious because it lacks the requisite teaching, suggestion or motivation for a screen having a mirrored surface proximal to a radiation beam source as currently claimed.

As stated previously, Ebbing is concerned with the angle of light with respect to a wafer surface on the distal side of the pinhole described therein. Ebbing accomplishes orthogonality by reflecting a laser beam to a target which is also located on the distal side of the pinhole described therein.

In contrast, Applicant describes and claims a radiation directing device, claim 1 and its dependents, or an apparatus for determining radiation beam alignment, claim 19 and its dependents, for determining whether a radiation beam is focused onto a pin hole so that the beam passes through the pin hole. Applicant accomplishes this purpose by having a mirrored surface located proximal to the radiation beam source. Because both the purpose of Ebbing's device and the location of its reflective surface differ from that of the claimed invention, there is no teaching, suggestion or motivation in Ebbing to produce Applicant's invention as

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claimed. Accordingly, Applicant respectfully requests that this ground of rejection be withdrawn.

Claims 5, 52, 54, 55, 60 and 61 stand rejected under 35 U.S.C. §103(a) as obvious over Ebbing in view of Walker et al. and Koso allegedly because Walker et al. describes a pinhole consisting of a metal or metallic layer and Koso describes that mirrored materials can be glass or quartz. The Office Action concludes that it would have been obvious to combine the description of Walker et al. in the apparatus of Ebbing to obtain a pinhole mirror consisting of a metallic layer.

Applicant respectfully submits that the combination of Ebbing in view of Walker et al. and Koso does not render the claimed invention obvious because these references neither teach, suggest or provide any motivation to place a mirrored surface on a pin hole mirror proximal to a radiation source where the claimed pin holes have an elliptical shape with a major axis of about 0.1 to 2 mm. The rejected claims depend from claims 1 or 19, which have been amended above. Claims 52 differs from claim 5 in that it recites a metallic coating of a mirror. As described above, the claimed invention would not have been obvious over the primary reference to Ebbing because Ebbing fails to teach or suggest a mirrored surface proximal to a radiation source. Applicant similarly has distinguished the secondary references in their previous response and reassert those remarks as applied to this ground of rejection. Because the purpose of both Ebbing and Walker or Koso differ from the purpose of Applicant's claimed pin hole mirror, the cited references would not have suggested or motivated one skilled in the art to combine their descriptions to obtain the claimed invention. Therefore, the primary reference to Ebbing fails to establish a teaching or suggestion or motivation of the claimed invention and the secondary references fail to cure its deficiencies. Accordingly, the claimed invention is unobvious over Ebbing in view of Walker et al. and Koso and Applicant respectfully requests that this ground of rejection be withdrawn.

Claims 8-11, 13-18, 24-27 and 56 stand rejected under 35 U.S.C. §103(a) as allegedly obvious over Ebbing in view of Bayrock et al. Ebbing is applied as described with respect to claim 1, for example. Bayrock et al. is alleged to describe mirrors or prisms for changing the direction of propagation of radiations beams so as to minimize device housing dimensions. The Office Action alleges that it would have been obvious to juxtapose a direction changing means as described by Bayrock et al. in the device of Ebbing in order to minimize device housing dimensions to obtain Applicant's invention.

Applicant respectfully reminds the Office of the required evidentiary component for establishing a proper *prima facie* case of obviousness. The evidentiary showing must be clear and particular and broad conclusory statements about the teachings of the cited references, standing alone, are not "evidence." *Brown & Williamson Tobacco*, 229 F.3d at 1125 (quoting *In re Dembiczak*, 175 F.3d 994, 1000 (Fed.Cir.1999), *abrogated on other grounds by In re Gartside*, 203 F.3d 1305, 53 USPQ2d 1769 (Fed.Cir.2000)).

Applicant respectfully submits that claim 8 is directed to a radiation directing device having a means for changing the direction of propagation for radiation beams are juxtaposed to one or more pin holes. Both Ebbing or Bayrock et al. are silent in regard to placement of a means for changing the direction of propagation of a radiation beam in juxtaposition to one or more pin holes. Bayrock et al. is cited for allegedly providing such a teaching, suggestion or motivation to juxtapose a direction changing means with a pin hole. However, the text cited in the Office Action and the figures referred to therein are completely devoid of any suggestion to juxtapose a direction changing means. Moreover, both Ebbing and Bayrock et al. describe mirrors in non-juxtaposed positions. Absence evidence of a teaching, suggestion or motivation to juxtapose a direction changing means with a pin hole, the conclusion that it would have been obvious to juxtapose the mirrors of Bayrock et al. with the pinhole of Ebbing is nothing more than an impermissible hindsight reconstruction

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based on Applicant's own disclosure. *C.R. Bard, Inc. v. M3 Sys., Inc.*, 157 F.3d 1340, 1352, (Fed.Cir.1998). Consequently, the cited references fail to render the claimed invention obvious because they fail to provide the proper evidentiary showing. Accordingly, Applicant respectfully requests that this ground of rejection be withdrawn.

Claims 12, 57 and 58 stand rejected under 35 U.S.C. §103(a) as obvious over Ebbing in view of Bayrock et al. and further in view of Walker et al. allegedly because Walker et al. describes a pinhole consisting of a metal or a metallic layer and Koso describes that mirrored materials can be glass or quartz. The Office Action appears to conclude that it would have been obvious to combine the description of Walker et al. or Koso together with Bayrock et al in the apparatus of Ebbing to obtain a pinhole mirror consisting of a metallic layer and having a juxtaposed means for changing direction of a radiation beam.

The rejected claims depend from claim 8, which is, in part, directed to a radiation directing device having a means for changing the direction of propagation for radiation beams are juxtaposed to one or more pin holes. For the reasons set forth above with respect to the unobviousness of claim 8, claims 12, 57 and 58 similarly would not have been obvious over Ebbing in view of Bayrock et al. Furthermore, neither Walker et al. nor Koso cure the deficiencies of Ebbing and Bayrock et al. because the mere description in Walker et al. of a metallic layer or in Koso of a quartz mirror taken alone or in combination with the other cited references would not have taught or suggested juxtaposing a means for changing the direction of propagation of a radiation beam with one or more pin holes as Applicant describes and claims. Therefore, the rejected claims would not have been obvious over the combination of Ebbing in view of Bayrock et al., Walker et al. and Koso. Accordingly, Applicant respectfully requests that this ground of rejection be withdrawn.

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Claims 37, 42, 44 and 45 stand rejected under 35 U.S.C. §103(a) as allegedly obvious over Asbury et al. in view of Ebbing. Claims 38-41 also stand rejected under 35 U.S.C. §103(a) as allegedly obvious over Asbury et al. in view of Bayrock et al. Further, claims 63 and 64 stand rejected under 35 U.S.C. §103(a) as allegedly obvious over Asbury et al. in view of Walker et al. Claims 48-50, 65 and 68-71 also stand rejected under 35 U.S.C. §103(a) as allegedly obvious over Asbury et al. in view of Piwonka-Corle et al. Finally, claims 66 and 67 stand rejected under 35 U.S.C. §103(a) as allegedly obvious over Asbury et al. in view of in view of Piwonka-Corle et al. further in view of Walker et al.

Applicant respectfully submits that these grounds of rejections have been rendered moot by the Katz-type Rule 132 Declaration of Dr. van den Engh submitted herewith as Exhibit A, which has removed the primary reference to Asbury et al. as applicable prior art. Accordingly, reconsideration and withdrawal of this rejection is respectfully requested.

CONCLUSION

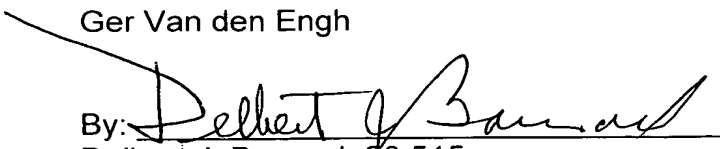
In light of the Amendments and Remarks herein, Applicants submit that the claims are now in condition for allowance and respectfully request a notice to this effect. Should the Examiner have any questions, he/she is invited to call the undersigned agent.

Respectfully submitted,

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APPENDIX A

1. A radiation directing device, comprising a screen having a mirrored surface proximal to a radiation beam source interrupted by one or more pin holes that pass through said screen, said pin holes having an elliptical shape, wherein the major axis of said elliptical pin holes is about 0.1 to 2 mm.

15. The apparatus of claim 14, wherein said means for changing the direction of propagation is placed to direct said radiation beams passing through said 2 or more pin holes orthogonal to a forward direction of propagation of a radiation beam [each other].

19. An apparatus for determining radiation beam alignment, comprising:

(a) a screen having a mirrored surface proximal to a radiation beam source interrupted by one or more pin holes passing through said screen; and

(b) a means for detecting radiation reflected by said mirrored surface, wherein said detecting means determines a position of a radiation beam relative to said pin hole.

25. The apparatus of claim 24, wherein said means for changing the direction of propagation is placed to direct said radiation beams passing through said 2 or more pin holes orthogonal to a forward direction of propagation of a radiation beam [each other].

38. The apparatus of claim 39, wherein said means for changing the direction of propagation is placed to direct radiation beams passing through said 2 or

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more pin holes orthogonal to a forward direction of propagation of a radiation beam
[each other].

50. The automated system of claim 48, further comprising a means for directing radiation from a radiation source to a flow chamber, said means for directing radiation from a radiation source to a flow chamber [directing means] attached to said positioning device.

51. A radiation directing device, comprising a mirrored surface proximal to a radiation beam source interrupted by one or more pin holes, said pin holes having an elliptical shape, wherein said mirrored surface prevents passage of radiation in the UV, VIS or IR regions of the spectrum, wherein the major axis of said elliptical pin holes is about 0.1 to 2 mm.